

What is claimed is:

1. A system for processing material comprising:
 - a multi-stage pre-reduction system;
 - a multi-stage freeze system;
 - a freezing means for freezing a product to its brittle temperature; and
 - at least one fine reducer that further reduce the material connected in parallelwherein a material to be processed enters the multi-stage pre-reduction system, then is transported to the multi-stage freeze system, then is transported to the freezing means then is transported to said at least one fine reducer.
2. The system of claim 1 wherein the multi-stage freeze system comprises:
 - a pre-freeze tunnel system that can be injected with cold used refrigerant gas;
 - a main freeze tunnel system in which a low-temperature liquid refrigerant may be sprayed onto the material; and
 - a temperature equalizing system used to equalize the temperature of the material wherein the pre-freeze tunnel and the main freeze tunnel are horizontally parallel and the temperature equalizing system is located between the pre-freeze tunnel and the main freeze tunnel.
3. The system of claim 2 wherein the freezing means comprises:
 - a second pre-freeze tunnel system set up to use the cold used gas from the pre-freeze tunnel system to cool the material;
 - a second main freeze tunnel system in which a low-temperature liquid refrigerant may be sprayed onto the material; and
 - a second temperature equalizing system used to equalize the temperature of the material wherein the second pre-freeze and the second main freeze tunnel are horizontally parallel and the second temperature equalizing system is between the second pre-freeze tunnel and the second main freeze tunnel.

4. The system of claim 3 further comprising a plurality of freezing means connected in parallel.
5. The system of claim 4 wherein the pre-freeze tunnel system can have a low-temperature refrigerant gas removed and further can use a low-temperature refrigerant gas from any other multi-stage freeze system.
6. The system of claim 4 wherein the fine reducers are connected with metal separators connected and the metal separators are connected with cryogenic separators for the release of rubber fragments, as well as additional reducers.
7. The system of claim 4 wherein the fine reducers are connected with heating and drying means where said heating and drying means are connected in parallel with a pre-classifying system that produces material and one or more post-processing devices.
8. The system of claim 7 wherein output from the post-processing devices is merged with the material separated in pre-classifying system and is sent to separators.
9. The system of claim 8 wherein the separators are connected to multi-stage classifying means.
10. The system of claim 9 wherein the classifying means are connected with heavy-grain separators and light-grain separators.
11. The system of claim 1 further comprising an optoelectronic monitoring and post-sorting means.

12. The system of claim 4 wherein the low-temperature refrigerant gas may be directed by cold gas fans and cold gas tubing lines from the multi-stage freeze system into the freezing means.

13. The system of claim 4 wherein the pre-freeze tunnel system, the second pre-freeze tunnel system and the heating and drying means are connected with gas mixers for merging the used refrigerant gas and drying gases.

14. The system of claim 13 further comprising a granulate freeze system connected with the fine reducers and a circuit system of directing the used refrigerant gas serving.

15. The system of claim 13 wherein the granulate freeze system and the low-temperature fine reducers connected with cold gas fans and cold gas transport means for carrying used refrigerant gas to the pre-freeze tunnel system.

16. The system of claim 15 wherein the low-temperature fine reducers are connect with the heating and drying means, a mixer, and a metering means for the addition of a dispersing agent.

17. The system of claim 15 wherein the mixer is connected with a powder classifying system, a light-material post-separating means subdivided according to powder grain sizes and a powder cleaning means.

18. A system for the treatment of material comprising:

a pre-reduction system;

a freeze system divided into a plurality of freeze zones which may spray a low-temperature refrigerant onto the material;

a temperature equalizing system; and

a multi-stage fine reducers for the stepwise reduction of the material wherein the material is processed from the pre-reduction system to the freeze system to the temperature equalizing system to the multi-stage fine reducers.